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WHOOPIING COUGH—ITS NATURE AND PREVENTION.

A POPULAR DISCUSSION OF A WIDESPREAD AND DANGEROUS DISEASE FOR WHICH FAMILIARITY HAS BRED CONTEMPT.

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Autumn has arrived. The wooded hills have put on the flaming pageantry of red and yellow. Summer, with its holidays is gone, and with it the warmth which invited the open window. The fires are being lighted now, and the windows are closed for the greater part of the time. As the season advances people will crowd together more and more. Ventilation will become less and less, and contagious diseases will spread more rapidly. The schools have opened and large numbers of children are brought together from three to six hours on five days in the week. The result is that the common communicable diseases will soon begin to appear.

Whooping cough, mumps, measles, German measles, and chicken pox, are with us so constantly that we have become accustomed to them and now regard them as the almost inevitable accompaniments of childhood. Many a mother has exposed her child to these diseases, firm in the belief that she was performing a good act and in ignorance of the jeopardy in which she placed the life of one whom she loved, yet it is safe to say that these common diseases not only take a heavy toll of the children of our land directly, but that they are also followed by results which may cripple the child or shorten its life. Of all the deaths registered in the United States during the year 1910, 30.7 per cent occurred in children under 15 years of age; 19.2 per cent was among children under 1 year of age, and 23.3 per cent in children under 2 years of age. Aside from the deaths which occurred from dietetic causes during this period, the common infectious and contagious diseases were responsible for this high mortality. During the year 1910 the death rate per 100,000 from measles was 12.3 per cent, from whooping cough 11.4 per cent. Scarlet fever, which is ordinarily considered a very serious disease, had a death rate for 1910 of 11.6 per cent per 100,000, while diphtheria had a death rate of 21.4 per cent per 100,000.

Whooping cough is one of the most serious of the diseases of this class in its immediate and remote effects. German statistics covering a period of 11 years show that the mortality among those attacked with this disease is, under one year of age 26.8 per cent; between 1 and 2 years of age, 13.8 per cent; between 2 and 5 years of age, 3 per cent; and between 5 and 15 years of age, 1.8 per cent. The disease is not infrequently complicated by inflammation of the lungs, and the violent coughing which occurs is apt to produce a harmful dilatation of the lung tissue itself. It is by no means uncommon in underfed children for the disease to be followed by tuberculosis of the lungs. Cases of paralysis complicating whooping cough have been reported, and changes in the eye due to hemorrhages into that organ produced by coughing have also been noted. It is thus seen that whooping cough, which it is estimated killed over 10,000 American children in the year 1911, is a disease seriously affecting the public health and demanding earnest attention.

The ancient Romans called this disease "Pertussis," which means "very cough," probably as we say in slang "some cough." We use

a word in speaking of it which describes the peculiar cough which is heard in the disease. It is a highly contagious disease accompanied by inflammation of the lining membrane of the breathing tubes, and a characteristic and far too familiar whoop. As already stated it is particularly prone to attack children and few persons arrive at maturity without having had the disease. Should they escape from it during childhood they are almost certain to have it in adult life. The disease is particularly fatal in children at the breast and the very aged.

The cause of whooping cough is unknown. Many investigators have endeavored to discover it, and not a few have described germs of one sort or another which they believe to be responsible for the disease. As yet none of these organisms has been fully proven to be the causal agent. On account of the fact that epidemics of whooping cough and measles frequently occur coincidentally, it has been thought that the diseases were nearly related. It is more probable, however, that the only relation which they bear to one another is that of the overcrowded and unhygienic conditions which predispose to their spread.

It seems to be pretty well proven that the disease is transferred from one person to another by fairly close contact only, and that the sputum is the medium in which the disease germs leave the body of the person having the disease. During the violent coughing the sputum is thrown a considerable distance from the victim in the form of a fine spray, and it is in this way and also by means of handkerchiefs, napkins, bedclothes, and the like which have been recently sprinkled with the infected sputum, that the disease germs are carried. The infectiveness of the sputum is most marked during the height of the disease, and it is active at all times during the attack. It is also believed by some to be transmitted for three or four weeks after the last whoop is heard.

The exact period of incubation is not known. Observations seem to show that it varies from 2 to 10 days.

The child at first has the symptoms of an ordinary cold in the head and thorax, accompanied by sharp nervous coughs which have a tendency to come in a series. This gradually increases until there is a succession of violent coughs accompanied by a feeling of suffocation and flushing of the face. It is frequently stated that the child "coughs until it is black in the face," and this is not an inaccurate description. As soon as the cough has ceased, the little sufferer endeavors to fill up its lungs again, but there is a nervous spasm of the muscles of the throat which narrows the opening through which the air must pass. The violent attempt to inspire the air through this small space produces the familiar "whoop" from which the disease receives its name. In mild attacks the child may cough only once or twice a day, but in other cases the seizures may occur every few minutes. If the child is kept quiet, the paroxysms occur less frequently. They may be brought about by the inhalation of dust or by excitement. Laughing, crying, eating, or drinking may also provoke them. Not infrequently the violence of the cough may cause vomiting or the involuntary passage of urine or feces.

In very severe cases there may be a bleeding from the nose or into the whites of the eyes, and blood may come from the ears or the mouth. It used to be thought that the disease was caused by a

little ulcer beneath the tongue, but it is now the belief that the ulcer is caused by the rubbing of the tongue over the lower teeth during coughing. In the early stages there is fever and the child is very restless. There is apt to be loss of appetite and because of the vomiting which takes place the children lose weight and become weak. In the early stages the eyelids are reddened and swollen, and the face may look puffed, particularly during the cough.

No child should be allowed to go through an attack of whooping cough without intelligent care and attention. This is indeed a very serious disease and it is unfortunate that custom has led many mothers who do not realize the dangers in the way of complications and after effects, to nurse the child through the attack without skilled assistance. Under proper treatment the suffering of the child can be very much reduced, the course of the disease may be shortened, and the dangers from complications greatly lessened. It is not only important for the child sufferer to be under treatment; his parents should also be instructed as to the methods of preventing the spread of the disease.

In the absence of complications children having whooping cough should be kept in the open air for 24 hours out of the 24. They should be well clad, the clothing being heavy enough to prevent chilling and light enough to prevent the child from becoming overheated or tired by the weight of the clothing. As long as the child has fever or is weak it should be kept in bed. The bed should be placed on a porch or in a tent on the roof or in the yard. The sides of the tent should not be put down except for the purpose of keeping out rain. The bedclothes should be so arranged that the covers can not be kicked off. The child should wear woolen pajamas, and if there is involuntary evacuation of urine or feces, a diaper should be substituted for the trousers. Inasmuch as dust provokes the paroxysms of coughing it may be necessary to sprinkle the roof or yard in which the child is kept. The diet should be such as can be easily and quickly digested. Soups, pasteurized milk, eggs, and the like should be given frequently. The matter of the treatment of the disease is one to be left to the physician attending the individual case.

As has been shown before, the cause of whooping cough is found in the sputum of persons having the disease. During the paroxysms of coughing this infected sputum is thrown a considerable distance. The first thing to do in the prevention of the spread of this disease is to prevent the sputum from the sick being taken into the system of the well. The sufferer should be provided with a quantity of soft paper napkins. As soon as these are soiled they should be burned. Everything which has come in contact with the patient should be sterilized before it is allowed to come in contact with other people or things which may be handled or used by other people. Bedclothing, napkins, table linen, towels, and the like may be sterilized by boiling.

Children having whooping cough should not ride in street cars or other public conveyances, nor should they attend schools, Sunday schools, or other places of public congregation. Well children should be taught that they must not come in close contact with children who "whoop" and as a method of protection against not only whooping cough but many other diseases, they should be thoroughly instructed as to the dangers of trading gum, exchanging pencils, and the other

means by which sputum may be transferred from one person to another. The habit of spitting on the hands in playing baseball and of promiscuous kissing should also be discouraged. If it is necessary that children having whooping cough should go upon the street, they should be plainly tagged, so that other children may be warned. The Virginia Health Bulletin suggests the wearing of a broad band of green ribbon on the arm for this purpose, and it is believed that this method would prove efficacious.

Houses in which cases of whooping cough exist should be marked with an appropriate placard.

Any disease which kills 10,000 children per annum is a serious one. If bubonic plague were to kill that many children in the United States in one year, the whole world would quarantine against our country. A child dead of whooping cough is just as dead as a child dead of plague. A child whose body is weakened by disease is a potential economic loss to the Nation. Whooping cough is a danger to be avoided and combated in the interest of humanity and the citizens of to-morrow.